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Instructions for use

A REVISION OF THE HELCONINI OF JAPAN AND A REVIEW OF HELCONINE GENERA OF THE WORLD

(HYMENOPTERA, BRACONIDAE)

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In 1931 a revision of the Helconini of Japan was given by the present writer, and then in 1937, 1952, 1954 and 1961 he added several species to the helconine fauna of Japan. In this paper he intends to revise the Helconini of Japan again. In the course of the present investigation twelve species of the Helconini have been known to occur in Japan, of which one is new to science and another one new to Japan. As defined in this work the helconine fauna of Japan is comparatively richer than that of Europe in genera: of four genera occurring in Japan three are also known in Europe, while the other one, *Brulleia* Szépligeti, is apparently Indo-Australian. On this occasion a preliminary review of helconine genera of the world will be given in the following pages.

1. Revision of the Helconini of Japan

Subfamily **Helconinae**

Tribe **Helconini**

The Helconinae including at present the tribes Helconini, Diospilini, Cenocoelini and Zelini are closely allied to the Macrocentrinae, being readily separated from the latter by the margined occiput. The Helconini are a well-known tribe of the subfamily, being easily distinguished from the Cenocoelini by the abdomen being normally attached to the propodeum, and from the Zelini by the quadrate or subquadrate head and by the long ovipositor. On the other hand this tribe is generally separated from the Diospilini by the front being conspicuously excavated and by the anterior ocellus being placed in the frontal excavation, and yet the separation is still open to discussion as Ashmead already pointed out as early as 1900. In the present paper, however, the separation is maintained as a matter of convenience.

Insofar as their habits are known the species of the Helconini appear to be parasitic on larvae of wood-boring and bark-mining beetles.

In Japan the present tribe is represented by four genera, which may be distinguished by the following key:—

Key to the Japanese genera of Helconini

1. First discoidal cell petiolate; frontal excavation deep; hind femur stout, sometimes armed with a tooth; maxillary palpus 6-segmented and labial palpus 4-segmented. 2

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- First discoidal cell sessile; frontal excavation comparatively shallow; hind femur slender, always unarmed; maxillary palpus 5-segmented and labial palpus 3-segmented. 3
- 2. Hind femur simple, unarmed. *Helcon* Nees
- Hind femur armed with a tooth. *Wroughtonia* Cameron
- 3. Recurrent nervure inserted in 2nd cubital cell; 2nd cubital cell large; anal cell with two transverse nervures. Ground colour of body yellowish red; antennae of female with a white ring. *Brulleia* Szépligeti
- Recurrent nervure inserted in 1st cubital cell; 2nd cubital cell small; anal cell with one transverse nervure. Ground colour of body black; antennae of female without a white ring. *Aspicolpus* Wesmael

Genus ***Helcon*** Nees

Helcon Nees, Mag. Ges. Naturf. Fr. Berlin 6: 216, 1812. [Type-species—*Helcon tardator* Nees].
Gymnoscelus Foerster, Verh. Naturh. Ver. Rheinl. 19: 255, 1862. [Type-species—*Helcon tardator* Nees].

Edyia Cameron, Jour. Straits Asiat. Soc. 44: 108 (as *Ediya*) & 109 (as *Edyia*), 1905. [Type-species—*Edyia annulicornis* Cameron].

Coelostephanus Kieffer, Ann. Soc. Ent. France 80: 232, 1911. [Type-species—*Coelostephanus rufus* Kieffer].

In 1862 Foerster applied *Helcon* Nees to species having the hind femur armed with a tooth. At the same time *Helcon annulicornis* Nees, 1834, not an “originally included species”, of which the hind femur is armed, was designated as the type of *Helcon*. Prior to this, however, *Helcon tardator* Nees, 1862, of which the hind femur is unarmed, had already been designated as the type by Westwood (1840). Owing to the above-mentioned facts *Helcon* must be applied to species having the hind femur unarmed; and *Gymnoscelus* Foerster is a junior objective synonym of *Helcon*, because both genera are based on the same type-species. *Edyia* Cameron, 1905, has been suppressed as a synonym of *Helcon* by Baltazar (1961). Furthermore, “*Edyia*” and “*Ediya*” are multiple original spellings of a single generic name in the same publication. *Coelostephanus* Kieffer has been suppressed as a synonym of *Helcon* by Muesebeck and Walkley (1951).

In Japan two species have been known to occur, which may be distinguished by the following key:—

Key to the Japanese species of *Helcon*

♀ ♀

- 1. Antenna with a white ring; legs brown to black with 2nd~4th segments of tarsi white; distance between posterior ocelli as long as diameter of an ocellus; prescutum strongly rugose; scutellum smooth with fine punctures; 1st abdominal tergite rugose, the longitudinal carinae extending from base to apex of tergite; 2nd and following tergites smooth and shining; ovipositor as long as propodeum and abdomen united. Length 9~11 mm. *Helcon tricolor* Watanabe
- Antenna without a white ring; legs reddish brown, with hind leg more or less darkened; distance between posterior ocelli longer than diameter of an ocellus; prescutum slightly rugose; scutellum smooth with fine punctures; 1st~3rd abdominal tergites rugose; 1st tergite with longitudinal carinae very short, only indicated basally; ovipositor a little shorter than thorax and abdomen united. Length 9~11 mm. *Helcon redactor* Thunberg

Helcon tricolor Watanabe (Figs. 1-2)

Helcon (Helcon) tricolor Watanabe, Ins. Mats. 6: 26, ♀, Fig. 1, 1931; ibid., Jour. Facul. Agr., Hokkaido Imp. Univ. 42: 152, 1937.

This species has been known by only the female, being distinguished from any other congeneric species occurring in the Palaearctic region by the antenna with a white ring.

Specimens examined. Japan: Hokkaido—1♀, Sapporo, 29-vi-27, T. Uchida; 1♀, Otoineppu, 15-vii-36, C. Watanabe; 1♀ (holotype of *Helcon tricolor*), Sôunkyo, 16-vii-30, C. Watanabe; 2♀♀, Soranuma, 26-vi-66, K. Kusigemati. Honshu—1♀, Takaosan, Tokyo-to, 26-vi-32, N. Kumasa. Shikoku—1♀, Ishizuchiyama, Ehime-ken, 27-vii-52, T. Edashige.

Host. Unknown.

Distribution. Japan.

Helcon redactor (Thunberg)

Ichneumon redactor Thunberg, Bull. Acad. Sci. St. Petersburg 8: 273, 1822.

Helcon femoralis Thomson, Opus. Ent. p. 1725, 1891.

Helcon (Helcon) yezonicum Watanabe, Ins. Mats. 6: 26, ♀, 1931.

Helcon (Helcon) redactor: Watanabe, Jour. Facul. Agr., Hokkaido Imp. Univ. 42: 152, 1937.

This species is widely distributed in the Palaearctic region. *Helcon yezonicum* Watanabe, 1931, from Japan was already suppressed as a synonym of *Helcon redactor* by Watanabe (1937).

Specimens examined. Japan: Hokkaido—2♀♀ (one the holotype of *Helcon yezonicum*), Jôzankei, 1-vii-12, S. Matsumura; 12♂♂, Aizankei, 2~3-vii-57, C. Watanabe & K. Kamijo.

Host. *Tetropium fuscum* Fabricius (after Hedqvist, 1967, in Europe). No host record has been given in Japan.

Distribution. Europe; Siberia; Sakhalin; Japan.

Genus ***Wroughtonia*** Cameron

Wroughtonia Cameron, Mem. Manchester Lit. Phil. Soc. 43: 56, 1899. [Type-species—*Wroughtonia cornuta* Cameron].

Helconidea Viereck, Bull. U. S. Nat. Mus. 83: 67, 1914. [Type-species—*Helcon aequator* Nees].

Syn. nov.

Duportia Kieffer, Bull. Agr. Inst. Sci. Saigon 3: 131, 1921. [Type-species—*Duportia cincticornis* Kieffer]. **Syn. nov.**

As stated in the preceding comment on the genus *Helcon* Nees, previous authors, who disregard Westwood's type-fixation of *Helcon*, have applied *Helcon* to species having the hind femur armed with a tooth, following the publication of Foerster's classification of the Braconidae (1862). In 1914 Viereck proposed *Helconidea* for *Helcon* Nees sensu Foerster, 1862, naming *Helcon aequator* Nees as the type. Although Ashmead (1900, a) and Turner (1918) already synonymized *Wroughtonia* Cameron, 1899, which was originally placed in the Evaniidae, with *Helcon* Nees sensu Foerster, no other authors have referred to this synonymy. It is correct, the writer believes, that *Wroughtonia* is to be considered the valid name of this genus. Accordingly *Helconidea* should be suppressed as a synonym of *Wroughtonia*. Moreover, having read the

original description of *Duportia* Kieffer, 1921, the writer has been convinced that *Duportia* should be also suppressed as a synonym of *Wroughtonia*. In Japan there are known to occur six species, of which one is new to science. They are distinguished by the following key:—

Key to the Japanese species of *Wroughtonia*

♀ ♀

***Wroughtonia spinator* (Lepeletier)**

Helcon spinator Lepeletier, Encycl. Méthod. Insect. 10: 41, 1815.

Helcon annulicornis Nees, Hymen. Ichneum. affin. Monogr. 1: 231, 1834.

Helcon cornutus Cameron, Proc. & Trans. Nat. Hist. Glasgow (2) 1: 270, 1886.

Helcon (Helcon) cornutus: Watanabe, Ins. Mats. 6: 24, 1931.

Helcon (Helcon) spinator: Watanabe, Jour. Facul. Agr., Hokkaido Imp. Univ. 42: 150, 1937.

Helcon cornutus Cameron, 1886, from Fukui, Japan, has already been suppressed as a synonym of *spinator* by Watanabe (1937).

Specimens examined. Japan: Hokkaido—1♀, Sapporo, 18-vi-04, M. Ishida. Honshu—4♀♀, Norikura, Nagano-ken, 29-vii-56, J. Minamikawa & Y. Kubota.

Host. *Phymatodes pusillus* Fabricius (after Hedqvist, 1967, in Europe). No host record has been given in Japan.

Distribution. Europe; Japan.

***Wroughtonia uchidai* (Watanabe)**

Helcon (Helcon) uchidai Watanabe, Ins. Mats. 6: 25, ♀, 1931; ibid., Jour. Facul. Agr., Hokkaido Imp. Univ. 42: 152, 1937.

On account of the scutellum being finely punctate the present species is closely related to *W. dentator* (Fabricius) rather than to *W. ruspator* (Linné). The male has not yet been described.

Specimens examined. Japan: Hokkaido—1♀, Kamiotoineppu, 15-vii-29, T. Uchida (holotype of *Helcon uchidai*); 1♀, Zenibako, 27-vii-28, T. Uchida; 1♀, Chikabetsu, 31-vii-48, H. Takahashi; 1♀, Tomuraushi, 30-vii-49, C. Watanabe.

Host. Unknown.

Distribution. Japan.

***Wroughtonia dentator* (Fabricius)**

Pimpla dentator Fabricius, Syst. Piez. p. 114, 1804.

Helcon aequator Nees, Mag. Gesel. Nat. Fr. Berlin 6: 219, 1812.

Helcon (Helcon) aequator: Watanabe, Ins. Mats. 6: 24, 1931.

Helcon (Helcon) dentator: Watanabe, Jour. Facul. Agr., Hokkaido Imp. Univ. 42: 151, 1937; ibid., Pub. Ent. Lab., Univ. Osaka Pref. 6: 114, 1961.

This species is widely distributed in the Palaearctic region. According to Watanabe (1961) it seems to be parasitic on the larva of *Tetropium castaneum* in Japan.

Specimens examined. Japan: Hokkaido—8♀♀, Antaroma, 2-viii-57, C. Watanabe & K. Kamijo; 1♀, Shikaribetsu-ko, 30-vi-66, K. Kusigemati.

Host. *Tetropium castaneum* Linné, *T. fuscum* Fabricius, *T. gabrieli* Weise, *Calcidium violaceum* Linné and *Monochamus sartor* Fabricius (after Hedqvist, 1967, in Europe).

Distribution. Europe; West Asia; Sakhalin; Japan.

***Wroughtonia planidorsum* (Watanabe)**

Helcon (Helconidea) planidorsum Watanabe, Ins. Mats. 18: 27, ♀, ♂, Fig. 2, 1952.

This species is readily distinguished from any other congeneric species occurring in Japan by the structure of the tooth of the hind femur.

Specimens examined. Japan: Honshu—2♀♀ (one the holotype of *Helcon planidorsum*), 2♂♂, Honda-mura, Gifu-ken, 6-iv-50, K. Ohobayashi, bred from *Dere thoracica*; 1♀, Kyoto, 15-vi-65, H. Takada; 3♀♀, Dainichi-tōge, Shizuoka-ken, 16-vi-57, J. Minamikawa; 1♀, Tamakusa-mura, Shizuoka-ken, 27-vi-59, J. Minamikawa; 1♀, Takaosan, Tokyo-to, 27-v-63, J. Minamikawa. Sakhalin: 1♀, Konuma, 23-vii-34, C. Watanabe.

Host. *Dere thoracica* White (after Watanabe, 1952, in Japan).
Distribution. Japan; Sakhalin.

***Wroughtonia ruspator* (Linné)**

Ichneumon ruspator Linné, Syst. Nat. Ed. 10a, 1: 568, 1758.

Helcon (Helcon) ruspator: Watanabe, Ins. Mats. 6: 24, 1931; ibid., Jour. Facul. Agr., Hokkaido Imp. Univ. 42: 150, 1937.

Helcon ruspator: Watanabe, Pub. Ent. Lab., Univ. Osaka Pref. 6: 113, 1961.

This species is widely distributed in the Palaearctic region. According to Watanabe (1961) it seems to be parasitic on the larva of *Leptura quadrifasciata* in Japan.

Specimens examined. Japan: Hokkaido—2♀♀, Jōzankei, 31-viii-07, S. Matsumura; 1♀, Nukabira, 4-viii-49, C. Watanabe; 11♀♀, Tomuraushi, 25~27-viii-54, C. Watanabe.

Host. *Leptura quadrifasciata* Linné and *Acanthocinus aedilis* Linné (after Hedqvist, 1967, in Europe).

Distribution. Europe; West Asia; Sakhalin; Japan.

***Wroughtonia nipponicus*, sp. nov. (Figs. 3-4)**

♀. Head a little wider than thorax, rather transverse; face strongly striate-rugose; clypeus closely reticulate-rugose, with apical margin truncate; vertex and temples smooth with some fine punctures; front deeply excavated with a strong median tooth; eyes moderate in size; malar space a little longer than basal breadth of mandible; ocelli small; distance between posterior ocelli 1.5 times as long as an ocellus; antennae shorter than body, 31~34-segmented; basal flagellar segments elongate and apical segments shortened, transverse; maxillary palpus long, 6-segmented and labial palpus 4-segmented.

Thorax convex dorsally; prescutum finely punctate, with median lobe prominent in front, strongly reticulate-rugose laterally; notauli distinctly impressed, foveolate; scutellum strongly reticulate-rugose; propleuron strongly striate-rugose; mesopleuron finely punctate on upper half and strongly reticulate-rugose on lower half; metapleuron reticulate-rugose; propodeum reticulate-rugose, conspicuously areolated. Fore wing (Fig. 3) with 1st abscissa of radius half as long as the 2nd abscissa; nervulus postfurcal. Hind wing (Fig. 4) with radial cell petiolate; nervulus slightly sinuate. Legs stout; hind femur with a strong tooth; claws simple.

Abdomen rather stout, not longer than thorax; 1st tergite gradually widened towards apex, twice as long as broad at apex, reticulate-rugose laterally, with two distinct longitudinal carinae extending from base to apical fourth of tergite, the interspace between carinae being almost smooth and shining; ovipositor a little longer than propodeum and abdomen united. Length 9~10 mm.

Black; antennae, palpi, mandibles except at apex, tegulae and legs dark brown; hind leg darkened; wings hyaline; stigma and veins dark brown.

♂. Unknown.

Type-series. Japan: Honshu—2♀♀ (one the holotype), Kozagawa, Wakayama-ken, 14~20-v-64, T. Kumata; 1♀, Kii-Ōshima, Wakayama-ken, 21~24-v-64, T. Kumata; 1♀, Kyoto, 29-v-38, K. Takeuchi; 1♀, Kyoto, 20-v-56, K. Iwata; 1♀, Sasayama, Hyogo-ken, 8-vi-52, K. Iwata; 1♀, Komagatake, Nagano-ken, 15-viii-24, K. Takeuchi; 4♀♀, Dainichi-tōge, Shizuoka-ken, 16-vi-57, J. Minamikawa. Kyushu—1♀, Kosugidani, Yakushima, 7~10-v-65, K. Kumata. Holotype in Entomological Institute, Hokkaido University, Sap-

poro, Japan.

This species is closely related to *Wroughtonia ruspator* (Linné), from which it is easily distinguished by the sculpture of the face and prescutum, by the structure of the abdomen and by the length of the ovipositor as stated in the present key.

Genus ***Brulleia*** Szépligeti

Brulleia Szépligeti, Gen. Ins. 22: 150, 1904. [Type-species—*Brulleia macrocephala* Szépligeti].

This genus is Indo-Australian, being readily distinguished from any other genera occurring in Japan by the recurrent nervure inserted in the 2nd cubital cell. It is represented by three species, of which one, the type-species, occurs in New Guinea and the other two in Asia including Vietnam, China and Japan.

Key to the Japanese species of *Brulleia*

♀ ♀

1. Abdomen entirely yellowish red; propodeum not areolated; fore wing with 2nd intercubitus almost straight, not bent near cubitus; ovipositor about 1.2 times as long as body. Length 14~20 mm. *Brulleia euphemia* Turner
- Abdomen with 3rd tergite on apical half and the following segments black; propodeum incompletely areolated; fore wing with 2nd intercubitus bent near cubitus; ovipositor 1.3~1.5 times as long as body. Length 19~24 mm. *Brulleia shibuensis* (Matsumura)

***Brulleia euphemia* Turner**

Brulleia euphemia Turner, Ann. Mag. Nat. Hist. (9) 4: 387, 1919.

Brulleia euphemia: Watanabe, Jour. Facul. Agr., Hokkaido Imp. Univ. 42: 148, 1937.

The type-locality of this species is Tonkin, North Vietnam. In 1937 Watanabe gave Yakushima, Kyushu, Japan, as its locality. On the basis of the specimens examined the writer gives Honshu and Hokkaido, Japan, as its localities for the first time. The male has not yet been described.

Specimens examined. Japan: Hokkaido—1♀, Jōzankei, 17-ix-54, T. Kumata. Honshu—1♀, Hirakura, Mie-ken, 17-viii-58, M. Matsuura. Kyushu—1♀, Sata, Kagoshima-ken, 24-iv-64, Y. Miyake.

Host. Unknown.

Distribution. Vietnam; Japan.

***Brulleia shibuensis* (Matsumura) (Figs. 5-6)**

Doryctes shibuensis Matsumura, Thous. Ins. Jap. Suppl. 4: 151, Pl. 52, Fig. 1, 1912.

Brulleia chinensis Turner, Ann. Mag. Nat. Hist. (9) 2: 171, 1918.

Brulleia shibuensis: Watanabe, Ins. Mats. 6: 22, 1931; ibid., Jour. Facul. Agr., Hokkaido Imp. Univ. 42: 148, 1937.

Brulleia chinensis Turner, 1918, described by one sex (♂) from North China was suppressed as a synonym of *Brulleia shibuensis* (Matsumura, 1912) by Watanabe (1937).

Specimens examined. Japan: Honshu—1♀ (holotype of *Doryctes shibuensis*), Shibu, Nagano-ken, 11-viii-10, S. Matsumura; 1♂, Tokyo, 4-vi-12, S. Hirayama; 3♀♀, Tokyo, 11-vii-22, S. Matsumura. Shikoku—1♀, Ochi-machi, Kōchi-ken, 17-vi-34, H. Wada.

Host. Unknown.

Distribution. Japan; China.

Genus ***Aspicolpus*** Wesmael

Aspicolpus Wesmael, Nouv. Mém. Acad. Sci. Brux. 11: 155, 1838. [Type-species—*Helcon carinator* Nees].

Aspidocolpus Agassiz, Nom. Zool. Index. Univ. 36, 1846. (Emend. for *Aspicolpus*).

In 1858 this genus was originally proposed for *Helcon carinator* Nees, 1812, as a subgenus of the genus *Helcon* Nees by Wesmael. It has been, however, elevated to a full genus by Ashmead (1900, a) and subsequent authors. It is more closely related to *Brulleia* Szépligeti than to *Helcon* on account of the 1st discoidal cell of the fore wing being sessile and the palpi having fewer segments.

In Japan there are known to occur two species, of which one is new to Japan. They are distinguished by the following key:—

Key to the Japanese species of *Aspicolpus*

♀ ♀

1. First abdominal tergite 1.5 times as long as broad at apex, reticulate-rugose, the longitudinal carinae being only indicated basally; 2nd tergite reticulate-rugose on basal two-thirds; ovipositor longer, as long as body. Length 10~11 mm. *Aspicolpus jozanus* (Watanabe)
- First abdominal tergite 1.5 times as long as broad at apex, reticulate-rugose, the longitudinal carinae being strongly indicated, extending from base to apical fourth; 2nd tergite obliquely striate-rugose; ovipositor shorter, as long as propodeum and abdomen united. Length 8~9 mm. *Aspicolpus eximius* Shestakov

Aspicolpus jozanus (Watanabe)

Helcon (Aspidocolpus) jonianum Watanabe, Ins. Mats. 6: 28, Fig. 2, 1931; ibid., Jour. Facul. Agr., Hokkaido Imp. Univ. 42: 153, 1937.

This species is closely related to *Aspicolpus carinator* (Nees) but it differs from the latter by having the legs dark brown to black and by the radius of the hind wing not being conspicuously sinuate.

Specimens examined. Japan: Hokkaido—3♀♀ (one the holotype of *Helcon jozanus*), 2♂♂, Jōzankei, 8-vii-07, S. Matsumura.

Host. Unknown.

Distribution. Japan.

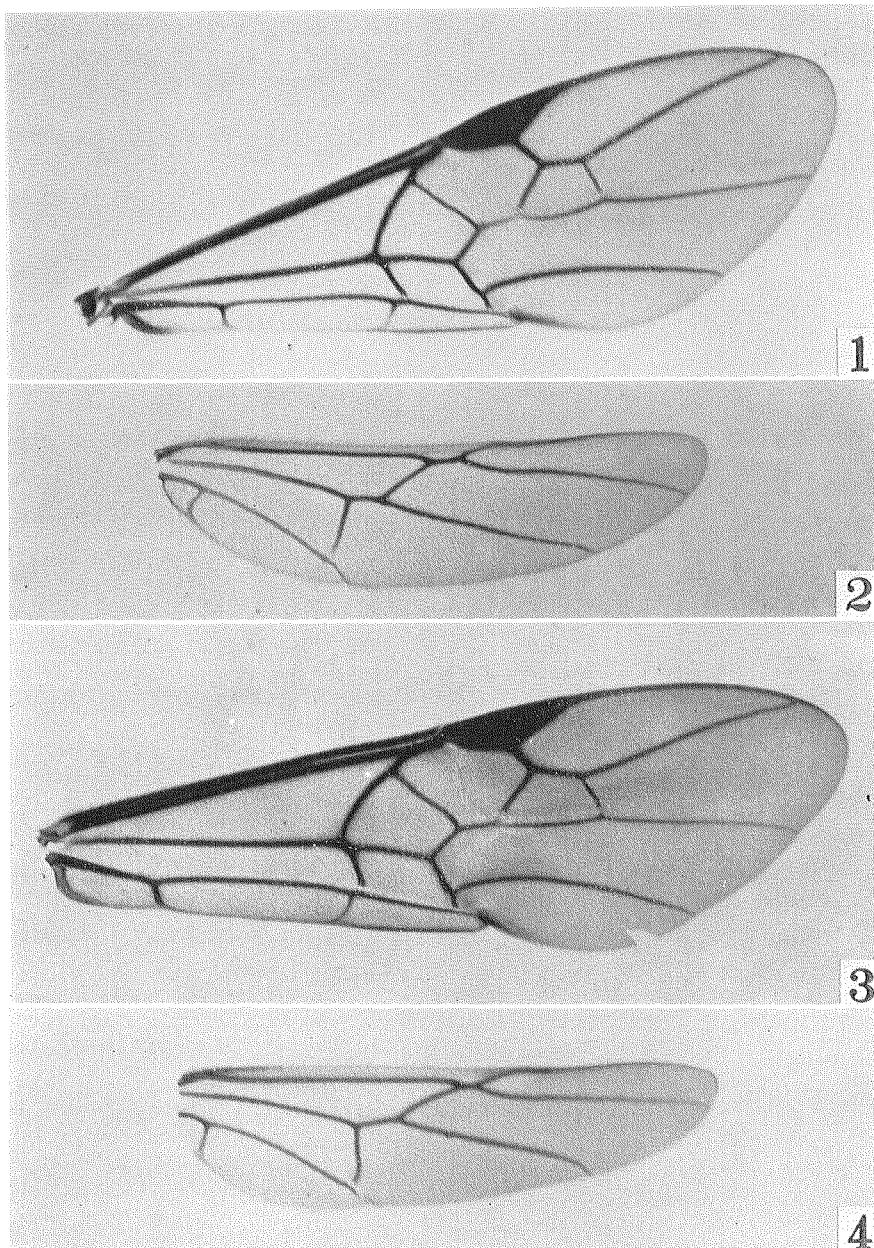
Aspicolpus eximius Shestakov (Figs. 7-8)

Aspidocolpus eximius Shestakov, Ark. Zool. 32 A (19): 19, 1940; Hedqvist, Ent. Tijdskr. 88: 136, Fig. 2, G & H, 1967.

This species was originally described from a single female taken at Sedanka near Vladivostok, East Siberia, its type being deposited in the collection of the Riksmuseum, Stockholm, Sweden. In this paper the writer gives Japan and Sakhalin as its localities for the first time. The specimens examined (2♀♀) agree well enough with the original description of *eximius*, but the antennae are 29- or 31-segmented (36-segmented according to the original description).

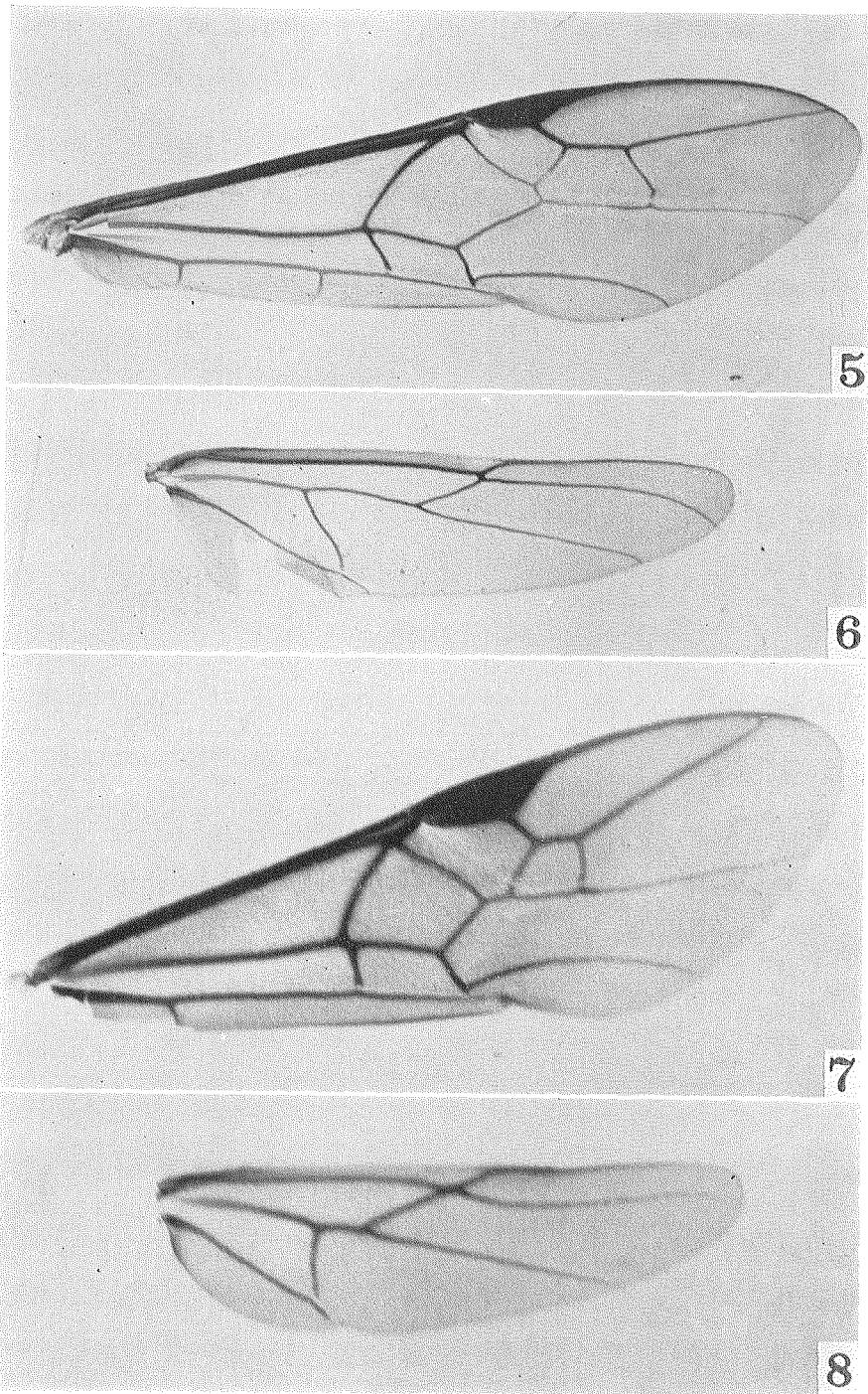
♂. The male was previously unknown; it is essentially like the female except for the usual sexual differences. In the present specimen the antennae are 31-segmented. Length 9 mm.

Specimens examined. Japan: Hokkaido—1♀, Tomuraushi, 30-vii-49, C. Watanabe. Sakhalin: 1♀, Tonnai, 1-vii-30, C. Watanabe; 1♂, Tokambo, 28-vii-34, C. Watanabe.



Figs. 1-2. Wings of *Helcon tricolor* Watanabe: 1. fore wing; 2. hind wing.

Figs. 3-4. Wings of *Wroughtonia nipponicus*, sp. nov.: 3. fore wing; 4. hind wing.



Figs. 5-6. Wings of *Brulleia shibuensis* (Matsumura): 5. fore wing; 6. hind wing.
Figs. 7-8. Wings of *Aspicolpus eximus* Shestakov: 7. fore wing; 8. hind wing.

Host. Unknown.

Distribution. East Siberia; Sakhalin; Japan.

Japanese species wrongly classified as Helconini

Having examined their types the following three species, which were originally referred to the Helconini, the writer has been convinced that the genera concerned belong to the Diopspilini. Detailed information of these species was already given in another paper by the writer (1972).

***Aspigonous aino* (Watanabe)**

Helcon (Aspidocolpus) aino Watanabe, Ins. Mats. 6: 29, 1931.

Aspigonous aino: Watanabe, Kontyû, 40: 18, 1972.

***Baeacis albiterebra* (Watanabe)**

Helcon (Aspidocolpus) albiterebra Watanabe, Ins. Mats. 6: 30, 1931.

Baeacis albiterebra: Watanabe, Kontyû, 40: 20, 1972.

***Baeacis semanoti* (Watanabe)**

Aspidocolpus semanoti Watanabe, Ins. Mats. 18: 81, 1954.

Baeacis semanoti: Watanabe, Kontyû, 40: 20, 1972.

2. Review of helconine genera of the world

In the following pages are reviewed genera which have been originally or subsequently referred to the Helconini. The present writer has, however, little knowledge of the majority of these genera except from the descriptions. Accordingly this review is preliminary, but he hopes that it will be useful for future reference by taxonomists. It should be noted here that Muesebeck so kindly gives the writer very valuable comments on some genera, of which the types of the type-species have been examined by Muesebeck himself. The writer is much pleased to use those comments by permission of Muesebeck in the present chapter.

The genera reviewed are alphabetically arranged below:—

Aspicolpus Wesmael, Nouv. Mém. Acad. Sci. Brux. 11: 155, 1838. [Type-species—*Helcon carinator* Nees, 1812].

This genus was originally proposed for *Helcon carinator* Nees by Wesmael (1838) as a subgenus of *Helcon* Nees, and then Ashmead (1900, a) and subsequent authors have treated it as a full genus. On account of the 1st discoidal cell being sessile, the frontal excavation being shallow and the palpi having fewer segments it is closely allied to *Brulleia* Szépligeti rather than to *Helcon* Nees as discussed in the preceding chapter.

Aspidocolpus Agassiz, Nom. Zool. Index Univ. 36, 1846. [Emend. for *Aspicolpus* Wesmael, 1838].

In 1846 Agassiz gave *Aspidocolpus* as an emended name for *Aspicolpus* Wesmael. This is, however, clearly an unjustified emendation.

Austrohelcon Turner, Ann. Mag. Nat. Hist. (9) 2: 166, 1918. [Type-species—*Austrohelcon meridionalis* Turner, 1918].

This genus was originally proposed for five Australian species, being separated from *Helcon* Nees (= *Gymnoscelus* Foerster) by the anal cell with only one transverse nervure in the fore wing and by the 2nd intercubitus being vertical, forming a right angle with the cubitus. Judging from its original description *Austrohelcon* seems to

be placed near *Helcon* Nees, because the 1st discoidal cell is petiolate.

Brulleia Szépligeti, Gen. Ins. 22: 150, 1904. [Type-species—*Brulleia macrocephala* Szépligeti, 1904].

This genus is Indo-Australian, being referred to a distinct genus-group, which is separated from any other genus-groups of the Helconini by the recurrent nervure inserted in the 2nd cubital cell.

Calohelcon Turner, Ann. Mag. Nat. Hist. (9) 2: 165, 1918. [Type-species—*Calohelcon obscuripennis* Turner, 1918].

Judging from its original description the Australian genus seems to be placed close to *Helcon* Nees.

Chelonohelcon Brues, Bernsteinforsch. 3: 61, 1933. [Type-species—*Chelonohelcon mirburidis* Brues, 1933].

This genus was proposed for a fossil insect.

Coelostephanus Kieffer, Ann. Soc. Ent. France 80: 232, 1911. [Type-species—*Coelostephanus rufus* Kieffer, 1911].

This genus was proposed by Kieffer (1911) for a Mexican species, being placed in the family Stephanidae. Turner (1918) transferred it to the Braconidae, stating that it might be the same as *Helcon* Nees (= *Gymnoscelus* Foerster). Recently it has been formally suppressed as a synonym of *Helcon* by Muesebeck and Walkley (1951), with whom the present writer agrees in their conclusion with no objection.

Duportia Kieffer, Bull. Agr. Inst. Sci. Saigon 3: 131, 1921. [Type-species—*Duportia cincticornis* Kieffer, 1921].

The genus *Duportia* is represented by a single species, *D. cincticornis*, which was originally described from three males bred from *Chlorophorus annularis* Fairmaire (Cerambycidae) in Vietnam. In the preceding chapter the writer proposes to suppress this genus as a synonym of *Wroughtonia* Cameron, 1899, on account of the front being deeply excavated, the hind femur being armed with a tooth, etc.

Edyia Cameron, Jour. Straits Asiat. Soc. 44: 108 (as *Ediya*) & 109 (as *Edyia*), 1905. [Type-species—*Edyia annulicornis* Cameron, 1905].

“*Edyia*” and “*Ediya*” are multiple original spellings of a single generic name in the original publication as indicated above. Having read its original description and other statements the writer is inclined to the opinion that this genus should be suppressed as a synonym of *Helcon* Nees as Baltazar (1861) has already done.

Electrohelcon Brues, Bernsteinforsch. 3: 85, 1933. [Type-species—*Electrohelcon facialis* Brues, 1933].

This genus is represented by a fossil insect.

Eumacrocentrus Ashmead, Proc. U.S. Nat. Mus. 23: 120, 1900. [Type-species—*Helcon americanus* Cresson, 1873].

This genus is represented by a single North American species. According to its original description *Eumacrocentrus* is separated from *Helcon* Nees (= *Gymnoscelus* Foerster) by “the basal segment of the hind tarsus longer than 2nd to 4th segments united and by the median cell of the hind wing much shorter than the costal cell.”

According to Muesebeck the characters mentioned above, however, are not available to distinguish the genus. His comment reads as follows:—

“*Eumacrocentrus* Ashmead. The distinguishing characters given by Ashmead are not good. Actually the basal segment of the hind tarsus is barely as long as the following segments united

in the female and shorter in the male. The most striking feature of the genus is the strongly petiolate and slender abdomen which is much compressed laterally on the apical half. The frons is well impressed; the 1st discoidal cell is petiolate; the recurrent enters the 1st cubital cell well removed from the 1st intercubitus; and the anal cell has a single, faint transverse nervure".

Euscelinus Westwood, Tijdschr. Ent. 25: 25, 1882. [Type-species—*Euscelinus sarawacus* Westwood, 1882].

This genus was placed in the Helconini by Ashmead (1900, a), but this placement seems to be incorrect. It has been represented by two species, *Euscelinus sarawacus* Westwood, 1882, living in Borneo, and *E. peregrinus* (Perkins, 1910) in Fiji and Hawaii. On the basis of *E. peregrinus* this genus was transferred to the Doryctinae by Beardsley (1961). Accepting Beardsley's view the writer excludes this genus from the Helconini.

Gymnoscelus Foerster, Verh. Nat. Ver. Preuss. Rheinl. 19: 255, 1862. [Type-species—*Helcon tardator* Nees, 1812].

Gymnoscelus Foerster, 1862, is clearly a junior objective synonym of *Helcon* Nees, because both genera are based on the same type-species.

Helcon Nees, Mag. Ges. Nat. Fr. Berl. 6: 216, 1812. [Type-species—*Helcon tardator* Nees, 1812].

Owing to the designation of the type-species of *Helcon* Nees, this generic name applies to species having the hind femur unarmed as discussed in the preceding chapter.

Helconidea Viereck, Bull. U. S. Nat. Mus. 83: 67, 1914. [Type-species—*Helcon aequator* Nees, 1812].

Although *Helconidea* was proposed by Viereck (1914) for *Helcon* Nees sensu Foerster, 1862, it is to be suppressed as a synonym of *Wroughtonia* Cameron, 1899, as discussed in the preceding chapter.

Megalohelcon Turner, Ann. Mag. Nat. Hist. (9) 2: 163, 1918. [Type-species—*Megalohelcon torresensis* Turner, 1918].

This Australian genus was placed in the Helconini by Turner, (1918), but the placement seems to be incorrect. Furthermore, it is incomprehensible that Parrot (1953) does not include this genus in his catalogue of the Australian Braconidae.

Having read Muesebeck's unpublished notes on the type-species, *Megalohelcon torresensis*, the writer has come to the conclusion that this genus should be excluded from the Helconini as evidenced by the following features stated by Muesebeck:—

"Head positively not margined behind; propodal spiracles large, slit-like; 1st abdominal segment petiolate, with spiracles situated a little before the middle of the tergite; ovipositor short, the sheath being subexserted".

The true systematic position is, however, unknown to the writer in the present state of his knowledge.

Neohelcon Szépligeti, in Voeltzkow, Reise O. Afr. 3: 427, 1913. [Type-species—*Neohelcon braconius* Szépligeti, 1913].

This genus was originally placed in the Helconini by Szépligeti (1913), being proposed for a single Madagascar species, *Neohelcon braconius*, which has been known by only one sex (♂). Having read the original description and Granger's statement (1949) the writer has been convinced that *Neohelcon* might be excluded from the Helconini, because the occiput is immargined. By courtesy of Muesebeck the writer knows that this genus is a component of the Braconinae. His comment reads as follows:—

"*Neohelcon* Szep. definitely belongs in the Braconinae according to my notes on the type of *N. braconius* Szep".

Parahelcon Kokujew, Rev. Russe Ent. 1: 14, 1901. [Type-species—*Parahelcon konowi* Kokujew, 1901].

The Australian genus is represented by a single species. It is very difficult to give a definite conclusion in regard to the true systematic position of the genus in the present state of the writer's knowledge. In this paper it is, for the time being, placed in the *Helcon*-group.

Pseudohelcon Szépligeti, Mitt. Zool. Mus. Berl. 7: 223, 1914. [Type-species—*Pseudohelcon tessmanni* Szépligeti, 1914].

The genus *Pseudohelcon* was originally proposed by Szépligeti (1914) for a single African species. Judging from its original description it seems to be placed near *Aspicolpus* Wesmael on account of the 1st discoidal cell being sessile.

Muesebeck's comment on the genus reads as follows:—

"*Pseudohelcon* Szep. I studied the type of the type-species in Budapest. The recurrent vein is exactly interstitial with the 1st intercubitus; it does not enter the 2nd cubital cell, which is relatively small and subtriangular. The fore and middle tibiae are very short, the fore metatarsus being as long as the fore tibia. The anal cell has 2 transverse nervures although the 2nd is faint and incomplete".

Rinamba Cameron, Ann. Soc. Ent. Belg. 56: 375, 1912. [Type-species—*Rinamba opacicellis* Cameron, 1912].

This genus was proposed for *Rinambas opacicellis* living in Belgian Congo, Africa, by Cameron (1912). Judging from its original description this genus might be placed near *Aspicolpus* Wesmael.

Schauinslandia Ashmead, Proc. U.S. Nat. Mus. 23: 120, 1900. [Type-species—*Schauinslandia femorata* Ashmead, 1900].

This genus was proposed for three species living in Chatham Islands by Ashmead, (1900, a & b), being placed near *Aspicolpus* Wesmael.

According to Muesebeck, however, this genus is to be transferred from the *Helconini* to the *Diospilini*. His comment reads as follows:—

"*Schauinslandia* Ashmead is essentially extremely similar to *Aspigonius* Wesm. as typified by *A. diversicornis* Wesm., if *Aspigonius* is kept in the *Diospilini* *Schauinslandia* belongs there also. Abdomen short and stout; 1st discoidal cell sessile".

Stirostoma Cameron, Ann. Soc. Ent. Belg. 56: 376, 1912. [Type-species—*Stirostoma longicornis* Cameron, 1912].

This genus is represented by a single species occurring in Belgian Congo, Africa. It was originally placed in the group *Cystomini* by Cameron (1912), and later it has been transferred to the *Helconini* by Brues (1926), but Brues' placement seems to be incorrect.

According to Muesebeck this genus is to be placed in the *Braconinae*. His comment reads as follows:—

"*Stirostoma* Cam. I saw the type of the type-species in the Congo Museum at Brussels (Tervuren). This definitely belongs in the *Braconinae*. There is a semicircular mouth opening and submediellan cell is very short as it characteristically is in the *Braconinae*".

Trachypetus Guérin, in Duperry, Voy. "Coquill" (Zool. 2) 2: 201, 1838. [Type-species—*Trachypetus clavatus* Guérin, 1838].

In 1838 this genus was originally proposed for the Australian *Trachypetus clavatus*, which has been known by only one sex (♂). Previous authors have taken somewhat divergent views about the systematic position of this genus: Ashmead, (1900, a) and

Szépligeti (1904) placed it near *Sigalphus* Latreille (=*Sphaeropyx* Illiger) in the subfamily Cheloninae; Schulz (1912) established a new subfamily, Trachypetinae, for the reception of this genus, placing it near the Cheloninae in the Cryptogasterini; while Brues (1920) fully discussed the position of this genus, stating that it is perhaps best placed in the subfamily Helconinae which we now know as the tribe Helconini.

By courtesy of Muesebeck the writer has had the opportunity to examine an authentic specimen (1♂, labelled with "Manly, N. S. W. 15, Jan. '07, C. Gibbons") determined as *Trachypetus clavatus* by A. W. Parrott. Having examined the specimen the writer has come to the opinion that the Helconinae are more preferable to the Cheloninae for inclusion of the present genus, because of the margined occiput and the excavated front. He has, however, hesitation to place it not only in the Helconini but also in any other recognized tribe of the Helconinae on account of the following aspects:—

Fore wing unusual; radius originating much before middle of stigma, not reaching to apex of wing, and suddenly bent upwardly near base of the 3rd abscissa; 2nd cubital cell large, rhomboid; recurrent nervure inserted in 2nd cubital cell. Abdomen with 1st segment petiolate with spiracles situated a little behind middle of the tergite; 2nd and 3rd segments fused, large, forming a carpace above and deeply concave beneath; 4th and following segments much narrow, visible above, not concealed.

In conclusion, the writer is inclined to the opinion that this genus should be excluded from the Helconini. However, further morphological examinations with abundant material of both sexes and biological investigations are necessary in order to have a definite conclusion concerning its true systematic position.

Trichiohelcon Turner, Ann. Mag. Nat. Hist. (9) 2: 168, 1918. [Type-species—*Iphiaulax phoracanthae* Foggatt, 1816].

Judging from its original description this genus should be placed near *Helcon* Nees. It is represented by a single species, *Trichiohelcon phoracanthae* (Foggatt), which has been known to occur in Australia and Tasmania, and to be a parasite of *Trogodendron fasciculatus* Schreiber (Cleridae).

Wroughtonia Cameron, Mem. Manchester Lit. Phil. Soc. 43: 56, 1899.

In 1899 Cameron erroneously placed *Wroughtonia* in the family Evanidae. Ashmead (1900, b) already stated that it might be the same as *Helcon* Nees sensu Foerster, 1862, but the synonymy has been disregarded by subsequent authors except for Turner (1919). Furthermore, *Helconidea* Viereck, 1914, is to be suppressed as a synonym of *Wroughtonia* as discussed in the preceding chapter.

In conclusion, the helconine genera reviewed above, excluding six genera incorrectly placed in the Helconini and two fossil genera, may be classified into the following three groups:—

***Helcon*-group**

This is the main group of the Helconini, being characterized by the following aspects:—1st discoidal cell of fore wing petiolate; recurrent nervure inserted in 1st cubital cell; head with front deeply excavated; maxillary palpus 6-segmented and labial palpus 4-segmented; hind femur stout, sometimes armed with a tooth.

The following genera may be referred to the group:—

| | |
|---------------------------------------|---|
| <i>Austrohelcon</i> Turner, 1918 | <i>Parahelcon</i> Kokujew, 1901 |
| <i>Calohelcon</i> Turner, 1918 | <i>Trichohelcon</i> Turner, 1918 |
| <i>Eumacrocentrus</i> Ashmead, 1900 | <i>Wroughtonia</i> Cameron, 1899 |
| <i>Helcon</i> Nees, 1812 | = <i>Helcon</i> Nees sensu Foerster, 1862 |
| = <i>Gymnoscelus</i> Foerster, 1862 | = <i>Helconidea</i> Viereck, 1914 |
| = <i>Edyia</i> Cameron, 1905 | = <i>Duportia</i> Kieffer, 1921 |
| = <i>Coelostephanus</i> Kieffer, 1911 | |

***Brulleia*-group**

This group is characterized by the following aspects:—1st discoidal cell of fore wing sessile; recurrent nervure inserted in 2nd cubital cell; head with front shallowly excavated; maxillary palpus 5-segmented and labial palpus 3-segmented; hind femur comparatively slender, unarmed.

The following single genus belongs to the group:—

Brulleia Szépligeti, 1904.

***Aspicolpus*-group**

This group is closely related to the *Brulleia*-group, from which it is distinguished by the following aspects:—recurrent nervure inserted in 1st cubital cell; 2nd cubital cell small; 2nd abscissa of radius a little shorter than 2nd abscissa of cubitus.

The following genera belong to the group:—

| | |
|-------------------------------------|--------------------------------------|
| <i>Aspicolpus</i> Wesmael, 1838 | <i>Pseudohelcon</i> Szépligeti, 1914 |
| = <i>Aspidocolpus</i> Agassiz, 1846 | <i>Rinamba</i> Cameron, 1912 |

Fossil genera

Chelonohelcon Brues, 1933

Electrohelcon Brues, 1933

Genera excluded from Helconini

| | |
|---|--|
| <i>Euscelinus</i> Westwood, 1882 (Doryctinae) | <i>Schauinslandia</i> Ashmead, 1900 (Helconinae, Diospilini) |
| <i>Megalohelcon</i> Turner, 1918 (Subfamily unknown to the writer) | <i>Stirostoma</i> Cameron, 1912 (Braconinae) |
| <i>Neohelcon</i> Szépligeti, 1913 (Braconinae) | <i>Trachypetus</i> Guérin, 1838 (Helconinae, tribe unknown to the writer) |

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Errata, Corrigenda & Addendum

P. 4, line 4 from bottom

For "*nipponicus*" read *nipponica*

P. 6, line 15

For "***nipponicus***" read ***nipponica***

P. 6, bottom

For "K. Kumata" read T. Kumata

P. 8, line 22

For "*jonganum*" read *jozanum*

P. 9, bottom

For "*nipponicus*" read *nipponica*

P. 15, line 15 from bottom

After "1899." add [Type-species—*Wroughtonia cornuta* Cameron, 1899].